REMARKS

Applicants acknowledge receipt of an Office Action with a mail date of December 11, 2009. In this response, no claim amendments are made. Applicants respectfully request reconsideration of the present application in view of the reasons that follow.

I. Rejection of the Claims Under 35 U.S.C. § 103

A. Claims 1, 3-6 and 9

Claims 1, 3-6 and 9 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Tasaka *et al.*, JP 2002-322321 ("Tasaka"). Applicants respectfully traverse this ground for rejection.

According to the Office:

> Tasaka et al. disclose an elastomer composition comprising: a) 100 parts by weight of at least one elastomer selected from the group consisting of a block copolymer comprising at least two of a polymer block A mainly consisting of an aromatic vinyl compound and at least one of a polymer block B mainly consisting of a conjugated diene compound, a hydrogenated block copolymer which is a hydride of the block copolymer and an olefinic copolymer rubber, b) 0.1-250 parts by weight of an amorphous polyolefin, c) 1-100 parts by weight of an oil, and d) 1-100 parts by weight of an olefin system, wherein the block copolymer is styrene butadiene styrene (SBS); the copolymer rubber is ethylene-1-butene; and the olefin system is atactic polypropylene (claims; [0025]; [0034]; [0043]; [0048]). Attention is directed to Example 6, wherein it demonstrates a composition comprising 35 parts by weight of SBS, 45 parts by weight of ethylene-butene rubber, 17.5 parts by weight of oil, 17.5 parts by weight of paraffin, and 20 parts by weight of polypropylene. The ratio of melt flow rates and molecular weight distribution are inherent properties.

Office Action, at pages 2-3.

The Office also states on page 3, line 12-13, that "Tasaka et al. are silent on the specific amount of 1-butene in the ethylene/1-butene random copolymer." Applicants submit that Tasaka fails to disclose ethylene/1-butene random copolymers for use in resin compositions, in which the ratio (MFR_{10}/MFR_2) and the molecular weight distribution of the

ethylene/1-butene random copolymer satisfies the recited relationship: Mw/Mn + 4.63 $\leq$ $MFR_{10}/MFR_2 \leq 14 - 2.9\text{Log}(MFR_2)$, as recited in claim 1.

The Office attempts to supplement this failure of Tasaka by stating that "[t]he ratio of melt flow rates and molecular weight distribution are inherent properties...[t]he specific amount of 1-butene is dependant on the ratio of ethylene to 1-butene in the random copolymer. By adjusting the ratio of the ethylene to 1-butene the hydrophobicity and branching will be affected. By increasing the amount of 1-butene the hydrophobicity will be reduced and the branching will be increased." Applicants respectfully disagree.

The ethylene/1-butene random copolymer (a) used in the present invention satisfies a specific relationship between MFR and the molecular weight distribution. That is, the molecular weight distribution (Mw/Mn) of the ethylene/1-butene random copolymer (a), satisfy the relationship: Mw/Mn + 4.63 $\leq$ $MFR_{10}/MFR_2 \leq 14 - 2.9\text{Log}(MFR_2)$. As described on page 6, lines 2-8, of the specification, this relationship between the ratio MFR_{10}/MFR_2 and the molecular weight distribution of the ethylene/1-butene random copolymer (a) affects the moldability of the claimed resin compositions. If an ethylene/1-butene random copolymer satisfying this relationship is incorporated into the resin composition, the resin composition exhibits an excellent, highly desirable moldability. See also page 3, lines 5-11, of the specification. In the present invention, it was found that making these parameters fall within the specific range will contribute to improved moldability, however, this feature is not disclosed in Tasaka.

Applicants submit that providing the ratio of melt flow rate and molecular weight distribution parameters within the claimed specific range is significant. For example, by containing 1-butene, a polymer can be a molecule containing a branch. And, while MFR_2 itself is correlated with molecular weight, the ratio MFR_{10}/MFR_2 defines branching. Further, the molecular weight distribution (Mw/Mn) provides an indication of the degree of uniformity of the molecular weight.

The present invention defines the branching using as parameters melt flow rate, MFR_{10}/MFR_2 and molecular weight distribution. These parameters vary, as shown in Table 1

of the specification of the instant application (reproduced below), and thus are not inherent properties in a polymer.

	Pro. Exam 1	Pro. Exam 2
Density(kg/m^3)	860	861
Melt flow rate @190°C	1.1	0.5
Mw/Mn	2.1	1.1
$MFR_{10}/MFR_{2.16}$	8.5	6.0

As shown by the values in the table, the density of ethylene/1-butene copolymer of a Production Example 1 (Pro. Exam 1) is about that of Production Example 2 (Pro. Exam 2). However, the values for Melt flow rate @190°C, Mw/Mn and MFR_{10}/MFR_2 of Production Example 1 are different from those of Production Example 2, respectively. Thus, by increasing the amount of 1-butene the hydrophobicity is not always reduced. This contradicts the Office's assertion that "[b]y increasing the amount of 1-butene the hydrophobicity will be reduced and the branching will be increased" described above.

The Office has also cited case law to support its argument that the claimed amount of 1-butene is obvious. For example, the Office has concluded that an ethylene/1-butene random copolymer (a) that contains 1-butene in an amount of 8 to 25 % by mol would be achieved via routine optimization. The Office's conclusion is based on the assumption that the ratio of melt flow rates and molecular weight distribution are inherent properties, and that "[b]y increasing the amount of 1-butene the hydrophobicity will be reduced and the branching will be increased." As shown above, however, one of ordinary skill following the Office's theory would not arrive at the claimed invention because in practice, increasing the amount of 1-butene does not always result in a reduced hydrophobicity and/or increased branching. Accordingly, the recognized result sought by the Office in its assertion that the amount of 1-butene is a result-effective variable stands in contrast to the results of the present invention.

Even if the amount of 1-butene were a result effective variable, the effects of the 1-butene as claimed does not alone provide particular effects to the parameters described above and to the moldability. Indeed, the composition also comprises 100 parts by weight of an ethylene/1-butene random copolymer (a), 10 to 500 parts by weight of at least one styrene

block copolymer (b), 10 to 140 parts by weight of an oil (c) relative to 100 parts by weight of the total amount of (a) and (b), and 0 to 500 parts by weight of a polypropylene resin (d) relative to 100 parts by weight of the total amount of (a) and (b). However, Tasaka does not disclose, teach or suggest the combination of features. Accordingly, Applicants submit that there is no expectation of success that one of ordinary skill would find the claimed range for at least the 1-butene, while also maintaining the composition to the parameters discussed above, because doing so would require undue experimentation.

Therefore, Applicants submit that because the Office's stand on inherency is incorrect, and because Tasaka fails to disclose, teach or suggest all of the features of independent claim 1, Tasaka does not render claim 1 to be unpatentable.

Applicants believe that the rejection of claims 1, 3-6 and 9 under 35 U.S.C. § 103(a) has been overcome and request that the rejection be withdrawn.

B. Claims 2, 7 and 8

Claims 2, 7 and 8 are rejected as being unpatentable over Tasaka in view of Ahmed *et al.*, U.S. Patent No. 6,184,291 ("Ahmed"). Applicants respectfully traverse this grounds for rejection.

As discussed above, Applicants submit that Tasaka fails to disclose, teach or suggest all of the features of claim 1 and therefore, Tasaka does not render claim 1 to be unpatentable. If an independent claim is nonobvious under § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Applicants submit that claims 2, 7 and 8, each of which ultimately depends from independent claim 1, are also non-obvious at least by virtue of their dependency from claim 1.

Additionally, according to the Office:

> Ahmed discloses an elastomeric composition comprising: a) from about 70 to about 90 percent by weight of a styrene triblock copolymer, b) from about 10 to about 30 percent by weight of an ethylene interpolymer characterized as an interpolymer of ethylene with at least one C_3-C_{20} α-olefin wherein this interpolymer is ethylene/1-butene having a density

> of about 0.875 g/cm3 to about 0.905 g/cm3, an MFR of about 1 to 10 g/10 min, and a molecular weight distribution of about 1.5 to about 2.5 (claim 1, 2, col. 6, lines 13-18; col. 9, lines 12-16: col. 11, lines 46-47; col. 12, lines 4-5, and lines 37-38), and Ahmed et al. further discloses the use of extender oils (col. 15 lines 53-55), to provide a thermoplastic elastomeric compositions comprising block copolymers in blend combination with substantially inert ethylene interpolymers (col. 1, lines 23-26). This composition can be fabricated into articles such as fibers, films, coatings and moldings (col. 15; lines 65-66).

(Office Action at pages 4-5).

The Offices concludes that it would have been obvious to use this specific ethylene/1-butene random copolymer with the expected result. However, Ahmed also fails to suggest the specific relationship: $Mw/Mu + 4.63 \leq MFR_{10}/MFR_2 \geq 14 - 2.9Log(MFR_2)$ or suggest that the amount of 1-butete falls within the claimed values.

Based on the foregoing, it would not have been easy to arrive at the present invention, even with the combination of Tasaka and Ahmed.

The ethylene/l-butene random copolymer (a) used in the present invention satisfies the specific relationship between MFR and the molecular weight distribution. As discussed above, the specific relationship between MFR and the molecular weight distribution affects moldability. Accordingly, providing a composition with the relational expression discussed above, the moldability is highly desirable. However, the specific relationship of the ethylene/1-butene random copolymer (a) is not disclosed, taught or suggested by Tasaka and Ahmed, either separately or in combination.

Since Ahmed does not resolve the fundamental deficiencies in Tasaka, Applicant submits that the combination of these references does not properly render either independent claim 1 obvious. Accordingly, claims 2, 7 and 8 are also nonobvious for at least their dependence on claim 1 and for their additional recitations.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejection under § 103.

CONCLUSION

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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